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Sato et al.

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(54) **IMAGE FORMING APPARATUS INCLUDING PHOTOSENSITIVE DRUM AND EXPOSING MEMBER MOVABLE BETWEEN EXPOSURE POSITION CLOSE TO DRUM AND SEPARATED POSITION SEPARATED FROM THE DRUM**

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CPC ***G03G 21/1661*** (2013.01); ***G03G 21/1633*** (2013.01); ***G03G 21/1666*** (2013.01); ***G03G 21/185*** (2013.01)

(58) **Field of Classification Search**
CPC G03G 21/1642; G03G 21/1623; G03G 21/1638; G03G 21/1661; G03G 21/185; G03G 21/1839; G03G 21/1842; B41J 2/435
See application file for complete search history.

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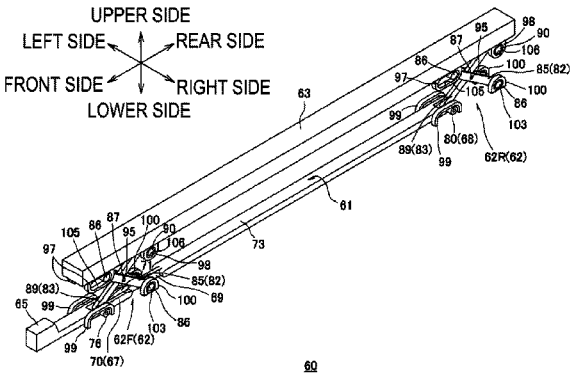
(57) **ABSTRACT**

An image forming apparatus includes: a main apparatus body; an opening/closing member; a drum unit including a photosensitive drum and can be pulled out of an accommodating space along an axial direction of the photosensitive drum; an exposing member provided in the main apparatus body and movable between an exposure position and an evacuation position; and a movable mechanism including: a first movable member movable in accordance with an opening/closing operation of the opening/closing member; and a second movable member for moving the exposing member between the exposure position and the evacuation position in accordance with movement of the first movable member. The second movable member supports both end portions of the exposing member. The second movable member moves the exposing member to the exposure position or the evacuation position by the movement of the first movable member in accordance with the movement of the opening/closing member.

15 Claims, 5 Drawing Sheets



(51) **Int. Cl.**
G03G 21/18 (2006.01)
B41J 2/435 (2006.01)

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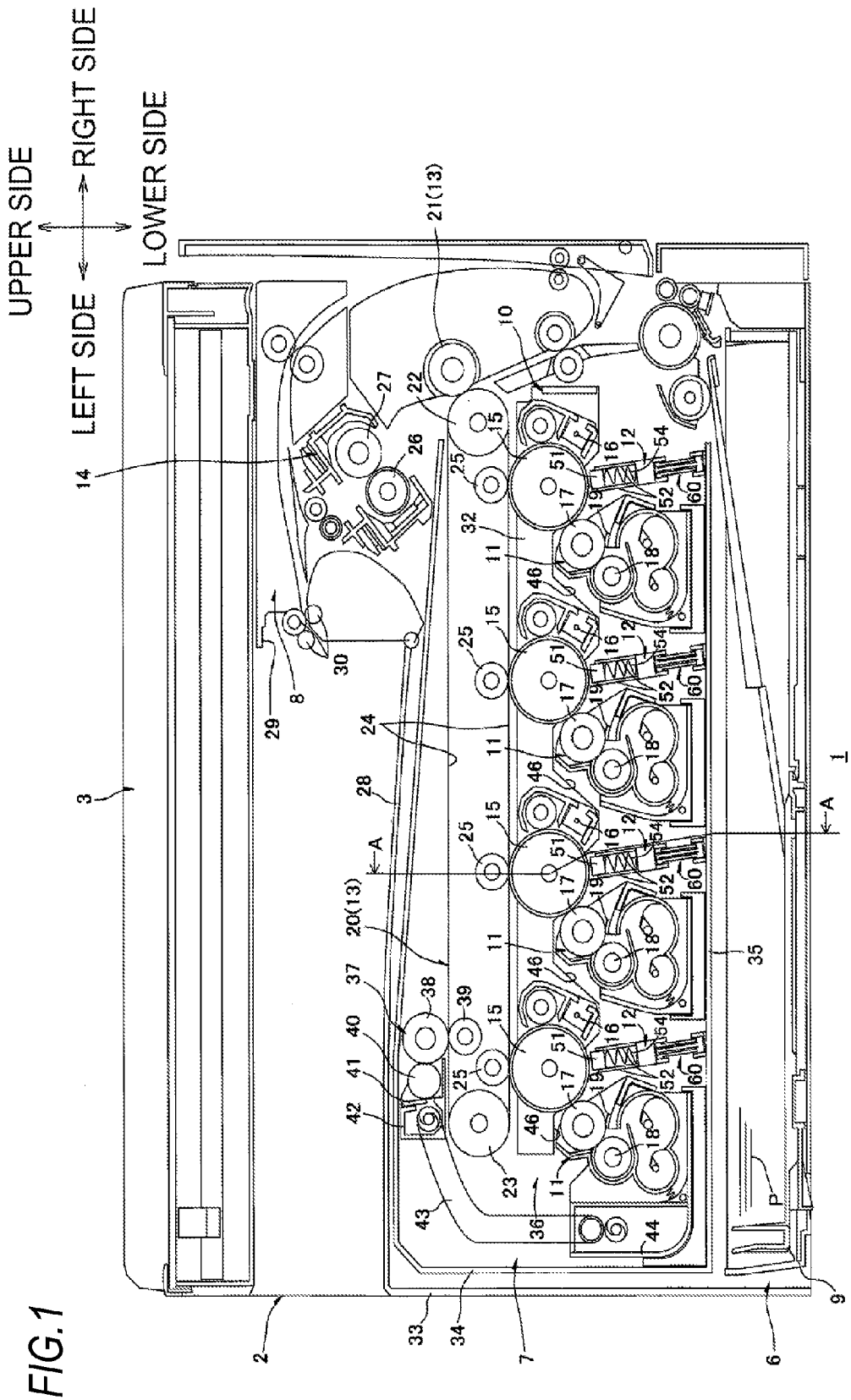
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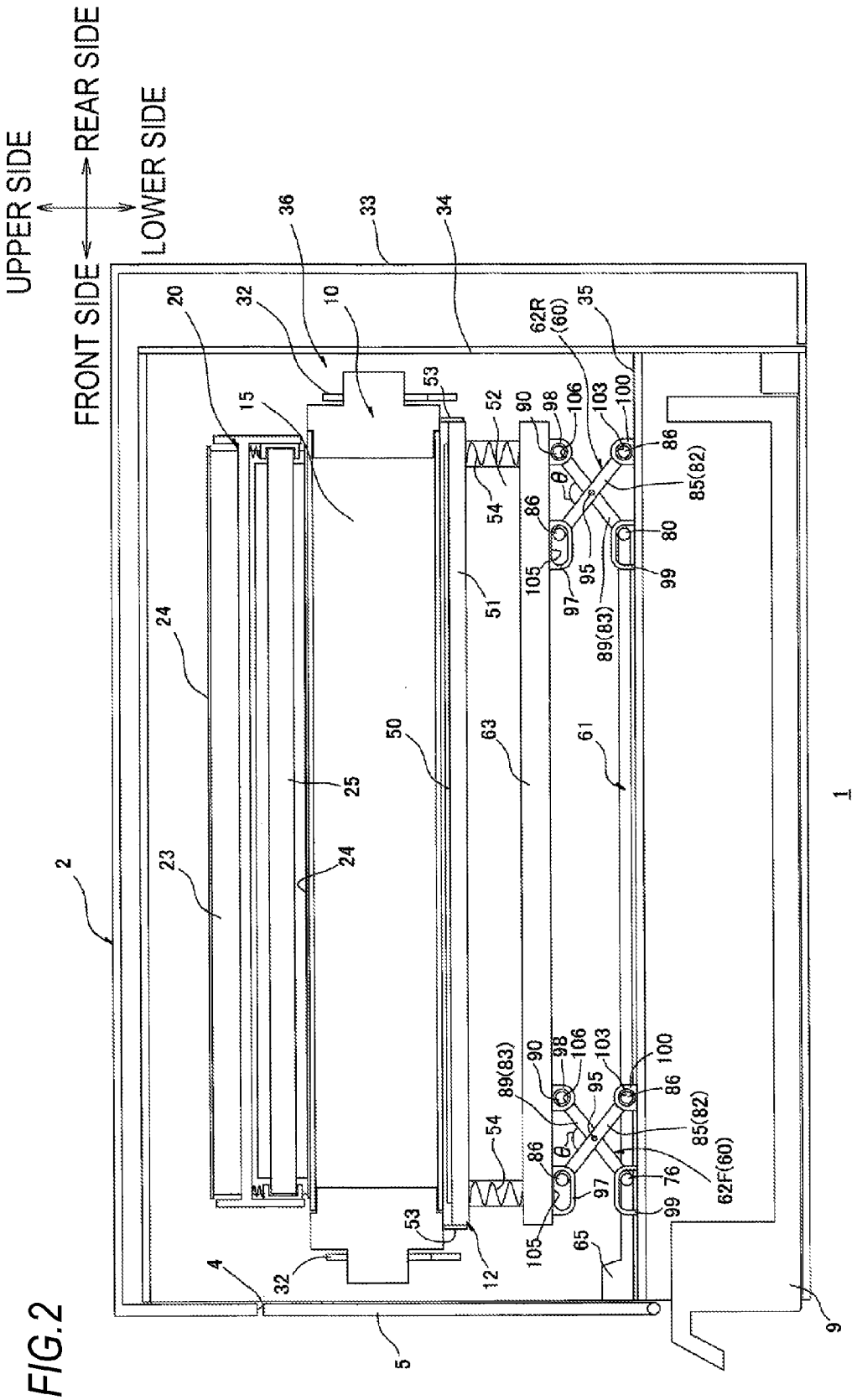
FIG. 1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54
61
62R (60)
62F(60)
63
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76
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85(82)
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FIG.2

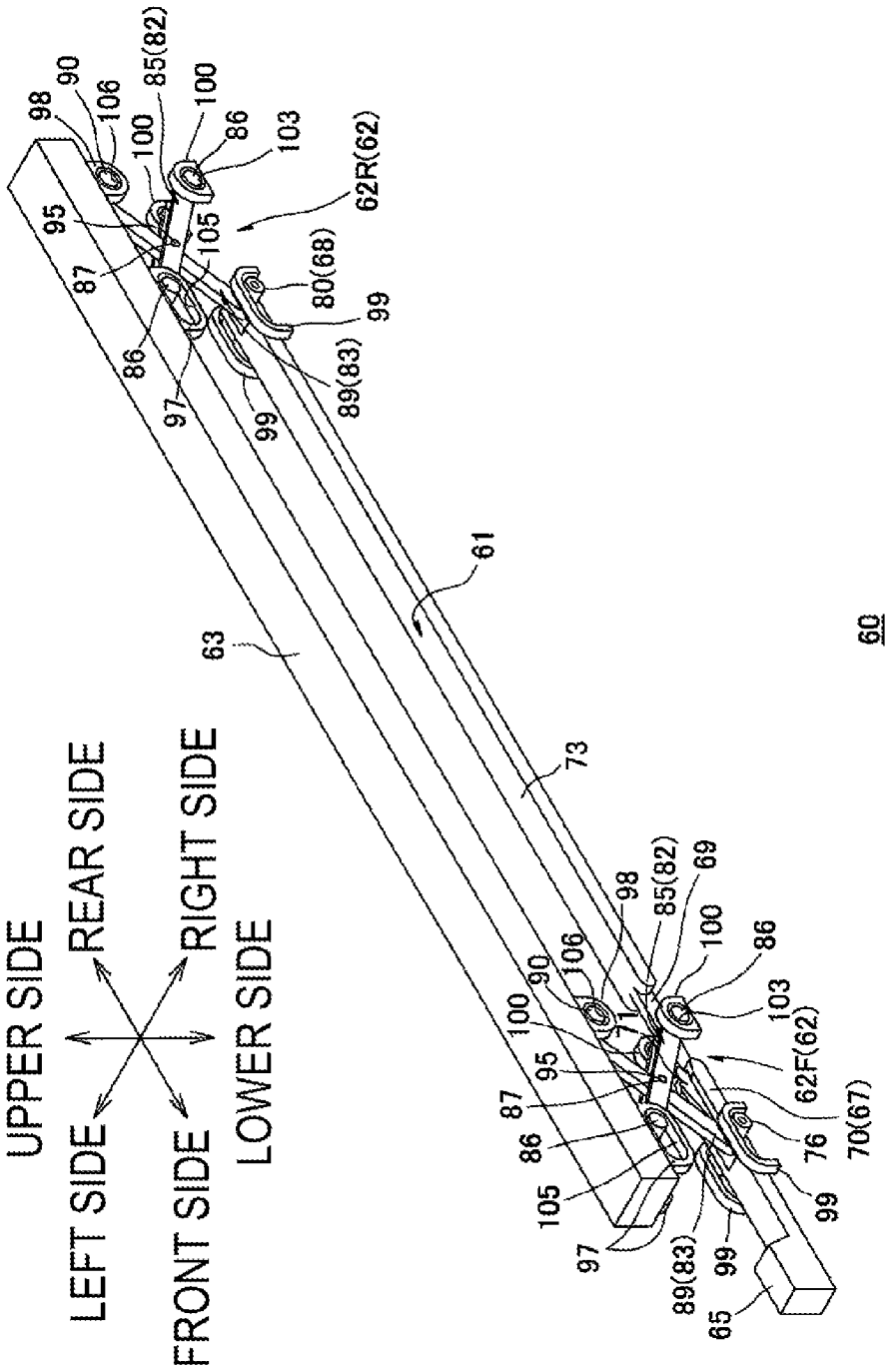
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FIG.3

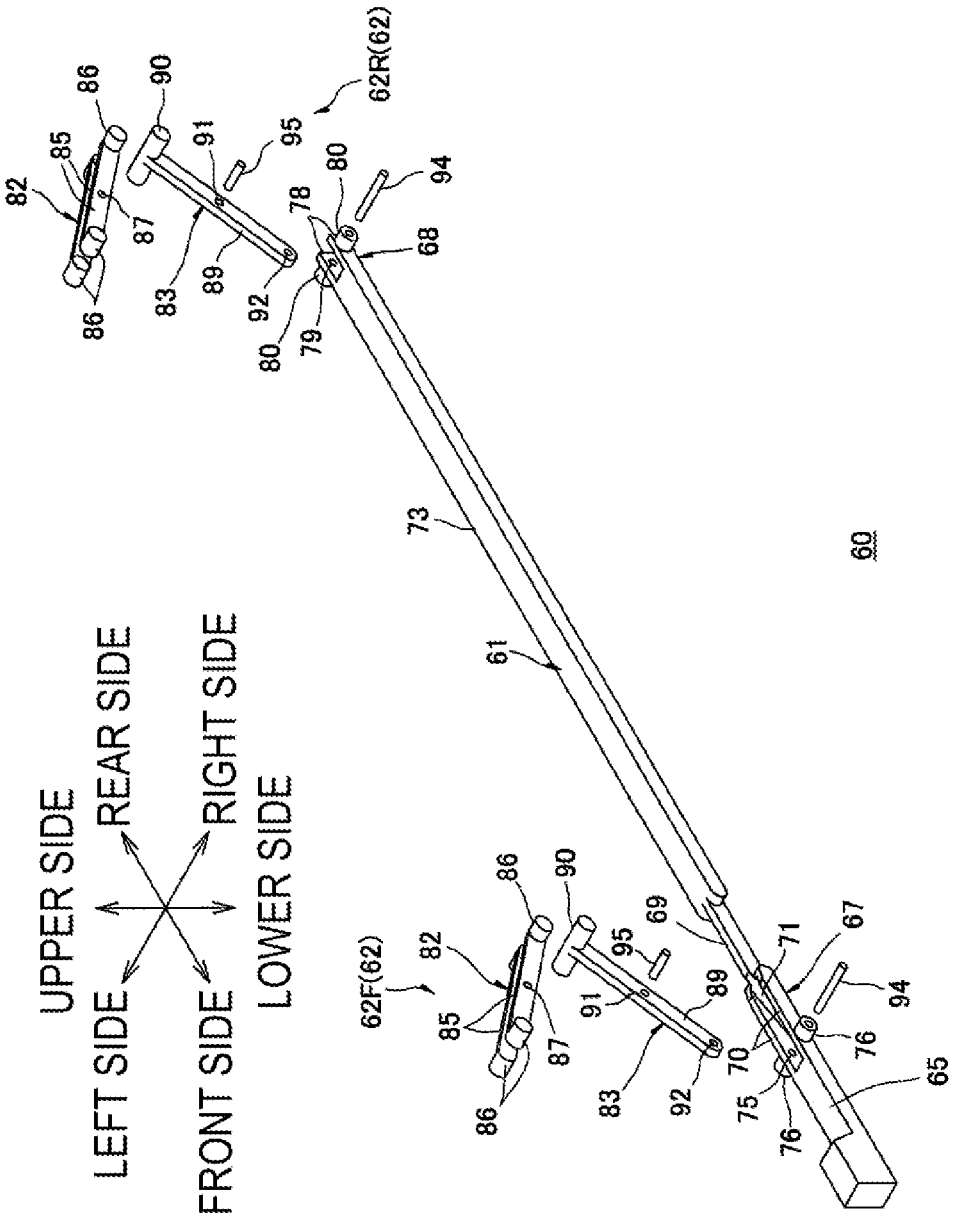
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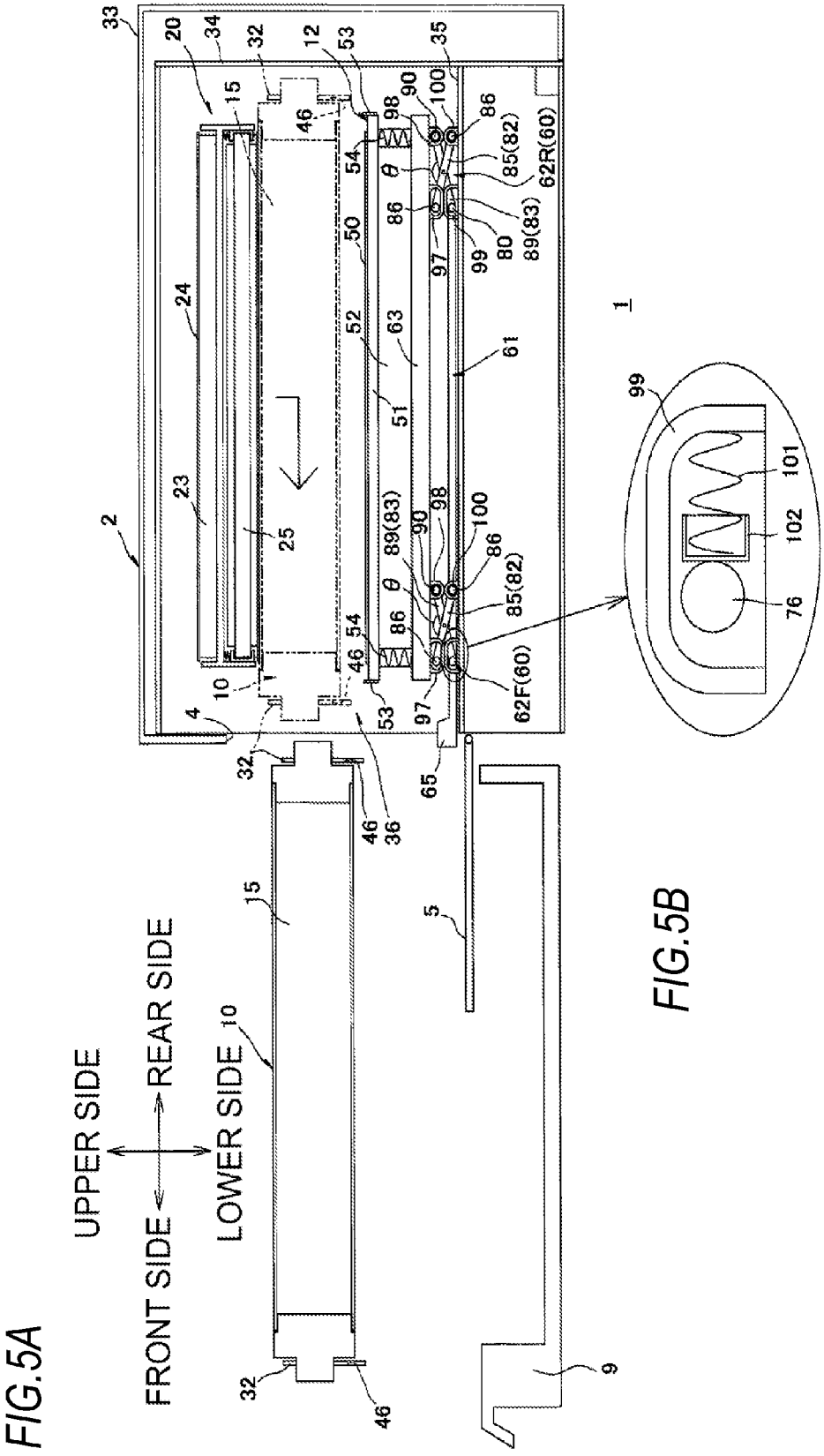
FIG.4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62R(60)
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101
102

FIG.5A

FIG.5B

IMAGE FORMING APPARATUS INCLUDING PHOTOSENSITIVE DRUM AND EXPOSING MEMBER MOVABLE BETWEEN EXPOSURE POSITION CLOSE TO DRUM AND SEPARATED POSITION SEPARATED FROM THE DRUM

CROSS-REFERENCE TO RELATED APPLICATIONS

This application is a continuation of prior U.S. application ser. No. 13/623,988, filed Sep. 21, 2012, which claims priority from Japanese Patent Application No. 2011-284468filed on Dec. 26, 2011, the entire subject matter of which is incorporated herein by reference.

TECHNICAL FIELD

The present invention relates to an image forming apparatus using an electrophotographic method.

BACKGROUND

As an example of electrophotographic image forming apparatuses, there have been known an image forming apparatus including a main apparatus body, a photosensitive drum, a processing cartridge mountable to and removable from the main apparatus body along the axial direction of the photosensitive drum, and an LED array head for exposing the photosensitive drums. In this image forming apparatus, when the processing cartridge is mounted to or removed from the main apparatus body, it is necessary to prevent interference between the processing cartridge and the LED array head. To this end, various configurations for evacuating the LED array heads have been considered.

For example, there have been proposed an image forming apparatus including a holding member that holds LED array heads and is movable in a vertical direction, and a bracket that is disposed to be adjacent to the holding member in the axial direction of photosensitive drums and is linearly movable in a direction perpendicular to both of the axial direction of the photosensitive drums and the vertical direction. In this related-art image forming apparatus, pins protruding along the axial direction of the photosensitive drums are provided at the holding member, and guide holes having tapered portions inclined diagonally upward are formed at the bracket.

In this related-art image forming apparatus, in accordance with linear movement of the bracket, the pins of the holding member are guided along the inclination of the tapered portions of the bracket, and the holding member is moved to advance or evacuate such that the LED array heads are moved between first positions where the LED array heads are close to the photosensitive drums and second positions where the LED array heads are evacuated from the photosensitive drums.

SUMMARY

However, in the above-described related-art image forming apparatus disclosed in Japanese Patent Application Laid-Open No. 2001-175046, in accordance with the linear movement of the bracket, the pins of the holding member are guided by the tapered portions of the bracket, whereby the LED array heads are moved between the first positions and the second positions. To this end, it is necessary to secure a linear movement distance for the bracket corresponding to the amount of displacement of the LED array heads. Since it is necessary to secure the linear movement distance, it is difficult to reduce a size the image forming apparatus.

Therefore, illustrative aspects of the present invention provide an image forming apparatus capable of securing certain movement of exposing members with reducing a size of the apparatus.

According to one illustrative aspect of the present invention, there is provided an image forming apparatus comprising: a main apparatus body having an accommodating space partitioned therein and an opening configured to connect the accommodating space and an outside; an opening/closing member provided at the main apparatus body and configured to move between an open position for opening the opening and a closed position for closing the opening; a drum unit comprising a photosensitive drum configured to carry a developer image and accommodated in the accommodating space, wherein the drum unit is configured to be pulled out of the accommodating space along an axial direction of the photosensitive drum; an exposing member provided in the main apparatus body and configured to move between an exposure position, which is close to the photosensitive drum for exposing the photosensitive drum, and an evacuation position where the exposing member evacuates from the photosensitive drum; and a movable mechanism. The movable mechanism comprises: a first movable member configured to move in accordance with an opening/closing operation of the opening/closing member; and a second movable member configured to move the exposing member between the exposure position and the evacuation position in accordance with movement of the first movable member. The second movable member is configured to support both end portions of the exposing member. The second movable member is configured to move the exposing member from the exposure position to the evacuation position by the movement of the first movable member in accordance with the movement of the opening/closing member from the closed position to the open position. The second movable member is configured to move the exposing member from the evacuation position to the exposure position by the movement of the first movable member in accordance with the movement of the opening/closing member from the open position to the closed position.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. **1** is a center section view illustrating a color printer as one example of an image forming apparatus according to an exemplary embodiment of the present invention;

FIG. **2** is a cross-sectional view illustrating the color printer shown in FIG. **1** as taken along a line A-A;

FIG. **3** is a perspective view illustrating a movable mechanism shown in FIG. **2** as seen from the top front side;

FIG. **4** is an exploded perspective view illustrating the movable mechanism shown in FIG. **3**; and

FIG. **5**A shows an explanatory view for explaining an operation of pulling (removing) a drum unit shown in FIG. **1** out of (from) a main body casing, and FIG. **5**B shows an enlarged view illustrating a main-body-side guide portion.

DETAIL DESCRIPTION

Exemplary embodiments of the present invention will now be described with reference to the drawings.

1 . Overall Configuration of Printer

As shown in FIGS. **1** and **2**, a printer **1** (one example of an image forming apparatus) is an intermediate transfer type color printer.

The printer **1** is a multi-function apparatus integrally includes a main body casing **2** (one example of a main apparatus body) and a flatbed scanner **3** configured to read image information of a document.

(1) Main Body Casing

The main body casing **2** is formed in a substantially box shape. At one side wall of the main body casing **2**, a main opening **4** (one example of an opening) is formed. The main body casing **2** is provided such that a front cover **5** (one example of an opening/closing member) for opening and closing the main opening **4** is swingable (e.g., movable) between a closed position (see FIG. **2**) for closing the main opening **4** and an open position (see FIGS. **5**A and **5**B) for opening the main opening **4** around an lower end portion thereof.

In the following description, the front cover (**5**) side (e.g., the left side on the drawing paper of FIG. **2**) is the front side of the printer **1**, and the opposite side (e.g., the right side on the drawing paper of FIG. **2**) to the front cover (**5**) side is the rear side of the printer **1**. The left and right sides of the drawings refer to the left and right sides of the printer **1** as seen from a user facing the printer **1**.

That is, in FIG. **1**, the left side of the drawing paper is the left side of the printer, and the right side of the drawing paper is the right side of the printer. Further, a direction from the drawing paper toward a viewer is the front side of the printer, and a direction from the drawing paper toward the opposite side to the viewer side is the rear side of the printer.

The main body casing **2** includes a sheet feeding unit **6** for feeding sheet P, an image forming unit **7** for forming an image on the fed sheet P, and a discharging unit **8** for discharging the sheet P having an image formed thereon.

(2) Sheet Feeding Unit

The sheet feeding unit **6** is provided at the bottom of the main body casing **2**. The sheet feeding unit **6** includes a sheet feed tray **9** which is for accommodating sheets P (see FIG. **5**A) and is mountable and removable.

Sheets P in the sheet feed tray **9** are conveyed by various rollers one at a time. The sheet P is fed into the image forming unit **7** (between an intermediate transfer belt **24** (to be described below) and a secondary transfer roller **21** (to be described below)) at a predetermined timing.

(3) Image Forming Unit

The image forming unit **7** is disposed on the sheet feeding unit **6**. The image forming unit **7** includes a drum unit **10**, a plurality of (e.g., four) developing units **11**, a plurality of (e.g., four) LED units **12**, a transfer unit **13**, and a fixing unit **14**.

(3-1) Drum Unit

The drum unit **10** is mounted to the main body casing **2** and is configured to be pulled out along the front/rear direction.

The drum unit **10** includes a pair of drum frames **32**, photosensitive drums **15**, and scorotron chargers **16**.

The paired drum frames **32** are formed in substantially flat plate shapes extending in the left/right direction and face each other with a gap in the front/rear direction.

At the lower portions of the drum frames **32**, mount/removal grooves **46** are formed corresponding to the plurality of developing units **11**.

The drum frames **32** are projected in the front/rear direction, and portions of the drum frames **32** overlapping the upper end portions of the developing units **11** during the projection are cut off, whereby the mount/removal grooves **46** are formed.

A plurality of (e.g., four) photosensitive drums **15** are provided corresponding to multiple colors (e.g., black, yellow, magenta, and cyan), and are arranged in parallel with intervals in the left/right direction.

The photosensitive drums **15** are formed in substantially cylindrical shapes extending in the front/rear direction (e.g., axial direction), and the front and rear end portions of the photosensitive drums **15** are supported to by the pair of drum frames **32**, such that the photosensitive drums **15** are rotatable.

The scorotron chargers **16** are provided corresponding to the plurality of photosensitive drums **15**, and are supported by the drum frames **32** such that the scorotron chargers **16** face the photosensitive drums **15** from the right sides of the photosensitive drums **15** with gaps.

(3-2) Developing Unit

Each of the plurality of developing units **11** is disposed to face the lower left side of a corresponding photosensitive drum **15**. Each of the developing units **11** includes a corresponding developing roller **17**.

The developing rollers **17** are supported at the upper ends of the developing units **11** such that the developing rollers **17** are rotatable and are exposed from their upper sides, and are in contact with corresponding photosensitive drums **15** of the drum unit **10** from their lower left sides.

Incidentally, the developing units **11** include feed rollers **18** for feeding toner to the developing rollers **17**, and layer-thickness regulating blades **19** for regulating the thicknesses of fed toner on the developing rollers **17**. In the developing units **11**, toner (one example of developer) is accommodated in the lower sides of the feed rollers **18**.

From among the plurality of developing units **11**, the leftmost developing unit **11** includes a waste-toner accommodating unit **44** for accommodating toner (waste toner) remaining on the surface of the intermediate transfer belt **24** (to be described below).

(3-3) LED Unit

Each of the plurality of LED units **12** is disposed on the lower side of a corresponding photosensitive drum **15** such that a corresponding LED unit **12** faces the corresponding photosensitive drum **15** in the vertical direction. The LED units **12** expose the surfaces of the corresponding photosensitive drums **15** on the basis of predetermined image data.

(3-4) Transfer Unit

The transfer unit **13** includes a belt unit **20** and a secondary transfer roller **21**.

The belt unit **20** is disposed along the left/right direction such that the belt unit **20** faces all of the photosensitive drums **15** from the upper sides of the photosensitive drums **15**.

The belt unit **20** includes a drive roller **22**, a driven roller **23**, the intermediate transfer belt **24**, and a plurality of (e.g., four) primary transfer rollers **25**, and a belt cleaner **37**.

The drive roller **22** and the driven roller **23** are disposed to face each other in the left/right direction with a gap therebetween.

The intermediate transfer belt **24** is wound around the drive roller **22** and the driven roller **23** such that the lower portion of the intermediate transfer belt **24** comes into contact with all of the photosensitive drums **15**. The intermediate transfer belt **24** goes around in accordance with the driving of the drive roller **22** and the following of the driven roller **23** such that the lower portion of the intermediate transfer belt **24** moves from the left side to the right side.

Each of the primary transfer rollers **25** is disposed to face a corresponding photosensitive drum **15** with the lower portion of the intermediate transfer belt **24** interposed therebetween.

The belt cleaner **37** is provided on the upper side of the left end portion of the intermediate transfer belt **24**. The belt cleaner **37** includes a belt cleaning roller **38**, a facing roller **39**, a relay roller **40**, a scraping blade **41**, and a waste-toner retaining unit **42**.

Toner remaining on the surface of the intermediate transfer belt **24** (e.g., waste toner) is held by the belt cleaning roller **38**, is held by the relay roller **40**, is scraped by the scraping blade **41**, and is retained in the waste-toner retaining unit **42**. The waste-toner retaining unit **42** is connected to the waste-toner accommodating unit **44** through a conveyance pipe **43**. The waste toner retained in the waste-toner retaining unit **42** is transferred into the waste-toner accommodating unit **44** through the conveyance pipe **43**.

The secondary transfer roller **21** is provided on the right side of the belt unit **20** such that the secondary transfer roller **21** faces the drive roller **22** of the belt unit **20** with the intermediate transfer belt **24** interposed therebetween.

(3-5) Fixing Unit

The fixing unit **14** is disposed on the upper side relative to the secondary transfer roller **21**. The fixing unit **14** includes a heating roller **26**, and a pressing roller **27** facing the heating roller **26**.

(3-6) Image Forming Operation

(3-6-1) Developing Operation

Toner in the developing units **11** is fed onto the feed rollers **18**, and then is fed onto the developing rollers **17**.

The rotation of the developing rollers **17** causes friction between the developing rollers **17** and the feed rollers **18**, which charges the fed toner on the developing rollers **17** to have positive polarity. The positively charged toner on the developing rollers **17** is regulated by the layer-thickness regulating blades **19** such that the toner is carried as thin layers of a constant thickness on the surfaces of the developing rollers **17**.

In accordance with the rotation of the photosensitive drums **15**, the surfaces of the photosensitive drums **15** are uniformly and positively charged by the scorotron chargers **16**, and are exposed by the LED units **12**. Therefore, electrostatic latent images corresponding to an image to be formed on a sheet P are formed on the surfaces of the photosensitive drums **15**.

When the photosensitive drums **15** further rotate, the toner carried on the surfaces of the developing rollers **17** is fed onto the electrostatic latent images of the photosensitive drums **15**. Therefore, on the surfaces of the photosensitive drums **15**, toner images based on reversal development are carried.

(3-6-2) Transferring and Fixing Operations

The toner images carried on the surfaces of the photosensitive drums **15** are primarily transferred onto the lower portion of the intermediate transfer belt **24** moving from the left side to the right side.

The transferred toner images on the intermediate transfer belt **24** are secondarily transferred onto a sheet P fed from the sheet feeding unit **6** while the sheet P passes a position where the intermediate transfer belt **24** faces the secondary transfer roller **21**.

Then, while the sheet P passes between the heating roller **26** and the pressing roller **27**, the transferred toner image on the sheet P is thermally fixed to the sheet P by heat and a pressure in the fixing unit **14**.

(4) Discharging Unit

At the top of the main body casing **2**, a discharge tray **28** onto which sheets P are discharged is formed. The discharging unit **8** is formed at the upper right end portion of the main body casing **2** such that the discharging unit **8** protrudes toward the upper side relative to the discharge tray **28**.

At the upper portion of the discharging unit **8** relative to the discharge tray **28**, a discharging port **29** for discharging sheets P is formed. The discharging unit **8** includes a plurality of (e.g., three) discharging rollers **30**, which is provided inside the discharging port **29** and is for discharging sheets P onto the discharge tray **28**.

The sheet P having the toner image fixed thereon in the fixing unit **14** is discharged onto the discharge tray **28** by the discharging rollers **30**.

(5) Flatbed Scanner

The flatbed scanner **3** is supported with a gap from the upper side of the discharge tray **28** by the upper end portion of the discharging unit **8**.

2 . Main Body Casing

As shown in FIG. **2**, the main body casing **2** includes an outer casing **33** forming the appearance of the printer **1**, and an inner casing **34** provided on the internal side of the outer casing **33**.

The outer casing **33** is formed in a substantially box shape which is substantially rectangular in a side view. The front cover **5** is provided at the front end portion of the outer casing **33**.

The inner casing **34** is formed in a substantially box shape which is substantially rectangular in a side view. The inner casing **34** has a length in the vertical direction and a length in the left/right direction such that the inner casing **34** can accommodate the sheet feeding unit **6** (see FIG. **1**) and the image forming unit **7**. The inner casing **34** is accommodated in the outer casing **33** with a gap from the outer casing **33** on the rear side.

Inside the inner casing **34**, a drum-unit accommodating part **36** (one example of an accommodating space) is partitioned for accommodating the drum unit **10**.

As shown in FIG. **1**, the drum-unit accommodating part **36** is formed below the belt unit **20** and has a substantially rectangular shape capable of accommodating the drum unit **10** as seen in a side view.

Further, as shown in FIG. **2**, an LED supporting frame **35** for supporting the LED units **12** is provided inside the inner casing **34**.

The LED supporting frame **35** is formed in a substantially flat plate shape and is provided above the sheet feed tray **9** so as to partition the internal space of the inner casing **34**.

The LED supporting frame **35** is provided with main-body-side guide parts **99** and main-body-side fitting parts **100**.

As shown in FIG. **3**, the main-body-side guide parts **99** include two front main-body-side guide parts **99** and two rear main-body-side guide parts **99**. The front main-body-side guide parts **99** are provided at the front portion of the LED supporting frame **35** (see FIG. **2**) such that the front main-body-side guide parts **99** face each other in the left/right direction with a gap. The rear main-body-side guide parts **99** are provided at the rear portion of the LED supporting frame **35** (see FIG. **2**) such that the rear main-body-side guide parts **99** face each other in the left/right direction with a gap.

Specifically, the front main-body-side guide parts **99** are provided corresponding to first guide bosses **76** (to be described below) of a slide member **61** (one example of a first movable member) (to be described below), and the rear

main-body-side guide parts **99** are provided corresponding to second guide bosses **80** (to be described below) of the slide member **61** (to be described below). Further, the front main-body-side guide parts **99** are aligned with the rear main-body-side guide parts **99** in the front/rear direction.

The main-body-side guide parts **99** are formed in a substantially U shape extending in the front/rear direction as seen in a side vide, and free end portions of the main-body-side guide parts **99** are fixed to the top of he LED supporting frame **35**.

The inner sides of the main-body-side guide parts **99** are formed such that lengths in the front/rear direction are about three times the outside diameter of each first guide boss **76** (second guide boss **80**) (to be described below), and lengths in the vertical direction is substantially the same as the outside diameter of each first guide boss **76** (the second guide boss **80**) (to be described below).

As shown in FIG. **5**B, a compression spring **101** (one example of a pressing member) and a covering part **102** are provided inside the front main-body-side guide part **99** corresponding to the first guide boss **76** (to be described below).

The covering parts **102** are formed in a substantially cylindrical shape extending in the front/rear direction, and the front end portions of the covering parts **102** are closed. The covering parts **102** are disposed to accommodate the front portions of the compression springs **101** therein.

The compression springs **101** are formed in an air-core coil shape extending in the front/rear direction. The rear end portions of the compression springs **101** are fixed to the rear end portions of the main-body-side guide parts **99**, and the front end portions of the compression springs **101** are fixed to the rear surfaces of the front walls of the covering parts **102**. Incidentally, other compression springs **101** and the covering parts **102** may be provided in the rear main-body-side guide parts **99** corresponding to the second guide bosses **80** (to be described below).

As shown in FIG. **3**, the main-body-side fitting parts **100** include two front main-body-side fitting parts **100** and two rear main-body-side fitting parts **100**. The front main-body-side fitting parts **100** are provided on the rear side relative to the two front main-body-side guide parts **99**, such that the front main-body-side fitting parts **100** face each other in the left/right direction with a gap. The rear main-body-side fitting parts **100** are provided on the rear side relative to the two rear main-body-side guide parts **99**, such that the rear main-body-side fitting parts **100** face each other in the left/right direction with a gap.

Specifically, the front main-body-side fitting parts **100** are provided corresponding to rear side first fitting portions **86** (to be described below) of a front movable member **62**F (to be described below), and the rear main-body-side fitting parts **100** are provided corresponding to rear side first fitting portions **86** (to be described below) of a rear movable member **62**R (to be described below).

The main-body-side fitting parts **100** are formed in a substantially semi-circle arc shape protruding upward from the top of the LED supporting frame **35** as seen in a side view, and formed in a substantially flat plate shape having a thickness in the left/right direction.

Fitting holes **103** are formed at the central portions of the main-body-side fitting parts **100**.

The fitting holes **103** are formed in a substantially circular shape as seen in a side view, and are formed to extend in the left/right direction.

The hole diameters of the fitting holes **103** are substantially the same as the outside diameters of the first fitting portions **86** (to be described below).

3 . LED Unit

Each of the LED units **12** includes an LED array **50** (one example of an exposing member), a first frame **51** that supports the LED array **50**, a pair of second frames **52** (see FIG. **1**) that sandwiches the first frame **51**, and a movable mechanism **60** for moving the LED array **50**.

(1) LED Array, First frame, and Second Frame

The LED array **50** is disposed at the upper end portions of the LED unit **12**. The LED array **50** is formed in a substantially flat plate shape extending in the front/rear direction, and integrally holds a plurality of LEDs arranged in parallel in the front/rear direction. The length of the LED array **50** in the front/rear direction is shorter than the length of the photosensitive drum **15** in the front/rear direction, and is longer than the length of the sheet passing area of the photosensitive drum **15**.

The first frame **51** is disposed below the LED array **50**. The first frame **51** is formed in a substantially rectangular shape extending in the front/rear direction as seen in a side view. The length of the first frame **51** in the front/rear direction is shorter than the length of the photosensitive drum **15** in the front/rear direction, and is longer than the length of the LED array **50** in the front/rear direction. The upper end portion of the first frame **51** supports the LED array **50**.

On the first frame **51**, a plurality of (e.g., two) positioning rollers **53** and a plurality of (e.g., two) compression springs **54** are provided.

The plurality of positioning rollers **53** are formed in a substantially circular plate shape, and are supported on both end faces of the corresponding first frame **51** such that the positioning rollers **53** are rotatable. The positioning rollers **53** are provided to protrude slightly upward from the LED array **50**, and abut on both end portions of the photosensitive drum **15** from the lower side.

The plurality of compression springs **54** are formed in an air-core coil shape, and are disposed at both end portions of the lower surface of the first frame **51** in the front/rear direction.

The upper end portions of the compression springs **54** are fixed to the lower surface of the corresponding first frame **51**, and the lower end portions of the compression springs **54** are fixed to the upper surface of a holding member **63** (to be described below).

As shown in FIGS. **1** and **2**, the paired second frames **52** are formed in a substantially flat plate shape extending in the front/rear direction, and are disposed to face each other in the left/right direction with a gap such that the paired second frames **52** sandwich the corresponding first frame **51**.

Therefore, the first frame **51** can slide elastically and vertically between the paired second frames **52**.

Further, the first frame **51** is always pressed upward by the compression springs **54** such that the positioning roller **53** abuts on the photosensitive drum **15**.

Therefore, the LED array **50** is positioned by the positioning roller **53** such that the LED array **50** faces the photosensitive drum **15** from the lower side with gaps (e.g., gaps corresponding to the protruding length of the positioning roller **53**).

(2) Movable Mechanism

As shown in FIGS. **2** and **3**, the movable mechanism **60** is provided below the pair of second frames **52**, that is, below the LED array **50**. The movable mechanism **60**

includes the holding member **63**, the slide member **61**, and a movable member **62** (one example of a second movable member).

(2-1) Holding Member

The holding member **63** is formed in a substantially rod shape extending in the front/rear direction. The holding member **63** supports the second frames **52** and the compression springs **54** from the lower side (see FIG. **3**). That is, the holding member **63** supports the LED array **50** through the first frame **51** and the second frames **52**.

On the lower surface of the holding member **63**, LED-side guide parts **97** and LED-side fitting portions **98** are provided.

As shown in FIG. **3**, the LED-side guide parts **97** include two front LED-side guide parts **97** and two rear LED-side guide parts **97**. The front LED-side guide parts **97** are provided at the front portion of the lower surface of the holding member **63** (see FIG. **2**) such that the front LED-side guide parts **97** face each other in the left/right direction with a gap. The rear LED-side guide parts **97** are provided at the rear portion of the lower surface of the holding member **63** (see FIG. **2**) such that the rear LED-side guide parts **97** face each other in the left/right direction with a gap.

Specifically, the front LED-side guide parts **97** are provided corresponding to first fitting portions **86** (to be described below) of the front side of the front movable member **62**F (to be described below), and the rear LED-side guide parts **97** are provided corresponding to first fitting portions **86** (to be described below) of the front side of the rear movable member **62**R (to be described below).

The LED-side guide parts **97** are formed in a substantially rectangular shape protruding downward from the lower surface of the holding member **63** as seen in a side view, and formed in a substantially flat plate shape having a thickness in the left/right direction.

Further, the LED-side guide parts **97** are disposed such that when the LED-side guide parts **97** are projected in the vertical direction, the LED-side guide parts **97** overlap the main-body-side guide parts **99**.

Guide holes **105** are formed at the central portions of the LED-side guide parts **97**.

The guide holes **105** are formed in a substantially oval shape extending in the front/rear direction as seen in a side view, and extend in the left/right direction.

The major length of each guide hole **105** is about three times the outside diameter of each first fitting portion **86** (to be described below), and the minor diameter of each guide hole **105** is substantially the same as the outside diameter of each first fitting portion **86** (to be described below).

The LED-side fitting portions **98** include two front LED-side fitting portions **98** and two rear LED-side fitting portions **98**. The front LED-side fitting portions **98** are provided on the rear side relative to the two front LED-side guide parts **97** such that the front LED-side fitting portions **98** face each other in the left/right direction with a gap. The rear LED-side fitting portions **98** are provided on the rear side relative to the two rear LED-side guide parts **97** such that the rear LED-side fitting portions **98** face each other in the left/right direction with a gap (see FIG. **2**).

Specifically, the front LED-side fitting portions **98** are provided corresponding to both end portions of a second fitting portion **90** (to be described below) of the front movable member **62**F (to be described below) in the left/right direction, and the rear LED-side fitting portions **98** are provided corresponding to both end portions of a second fitting portion **90** (to be described below) of the rear movable member **62**R (to be described below) in the left/right direction.

The LED-side fitting portions **98** are formed in a substantially semi-circle arc shape bulging downward from the lower surface of the holding member **63** as seen in a side view, and formed in a substantially flat plate shape having a thickness in the left/right direction.

The LED-side fitting portions **98** are disposed such that when the LED-side fitting portions **98** are projected in the vertical direction, the LED-side fitting portions **98** overlap the main-body-side fitting parts **100**.

Fitting holes **106** are formed at the central portions of the LED-side fitting portions **98**.

The fitting holes **106** are formed in a substantially circular shape as seen in a side view, and extend in the left/right direction.

The hole diameters of the fitting holes **106** are substantially the same as the outside diameters of the second fitting portions **90** (to be described below).

(2-2) Slide Member

The slide member **61** is formed in a substantially rod shape extending in the front/rear direction. The slide member **61** is disposed on the upper surface of the LED supporting frame **35** such that the slide member **61** is slidable along the front/rear direction with respect to the main body casing **2**.

Specifically, as shown in FIG. **4**, the slide member **61** integrally includes a pressed portion **65**, a first engagement portion **67**, a connection portion **69**, a main body portion **73**, and a second engagement portion **68**.

The pressed portion **65** is provided at the front end portion of the slide member **61**, and is formed in a substantially L shape in a side view.

The first engagement portion **67** is provided continuously on the rear side of the pressed portion **65** such that the first engagement portion **67** corresponds to the front end portion of a second link member **83** (to be described below) of the front movable member **62**F (to be described below).

The first engagement portion **67** includes a pair of first supporting portions **70** and an inclined portion **71**.

The paired first supporting portions **70** are formed from both end portions of the rear end portion of the pressed portion **65** in the left/right direction, formed in a substantially flat plate shape protruding toward the rear side, and are disposed to face each other in the left/right direction with a gap.

Each of the paired first supporting portions **70** includes an insertion hole **75** and first guide bosses **76** formed at the front end portion of the corresponding first supporting portion **70**.

The insertion holes **75** are formed in substantially circular shapes facing each other in a side view, and extend in the left/right direction. The hole diameters of the insertion holes **75** are substantially the same as the outside diameter of an insertion shaft **94** (to be described below).

The first guide bosses **76** are formed in a substantially cylindrical shape protruding outward in the left/right direction from the circumferential end portions of the insertion holes **75**.

The inclined portion **71** is provided between the paired first supporting portions **70** on the rear side relative to the insertion hole **75** (the first guide bosses **76**), and is formed in a substantially triangular shape in a side view. Specifically, the upper surface of the inclined portion **71** is formed to be inclined upward as it goes to the rear side.

The connection portion **69** is formed in a substantially flat plate shape extending from the rear end portion of the inclined portion **71** toward the rear side, and has a section shape extending in the vertical direction.

The main body portion **73** is formed in a substantially rod shape extending in the front/rear direction, and formed in a substantially semi-circle arc shape such that the front end portion of the main body portion **73** bulges toward the front side as seen in a side view. The central portion of the front end portion of the main body portion **73** in the left/right direction is connected to the rear end portion of the connection portion **69**.

The second engagement portion **68** is provided continuously from the rear side of the main body portion **73** such that the second engagement portion **68** corresponds to the front end portion of the second link member **83** (to be described below) of the rear movable member **62**R (to be described below).

The second engagement portion **68** includes a pair of second supporting portions **78**.

The paired second supporting portions **78** are formed from both end portions of the rear end portion of the main body portion **73** in the left/right direction, formed in a substantially flat plate shape protruding toward the rear side, and are disposed to face each other in the left/right direction with a gap.

Each of the paired second supporting portions **78** includes an insertion hole **79** and a second guide boss **80** formed at the front end portion of the corresponding second supporting portion **78**.

The insertion holes **79** are formed in substantially circular shapes facing each other in a side view, and extend in the left/right direction.

The second guide bosses **80** are formed in a substantially cylindrical shape protruding outward in the left/right direction from the circumferential end portions of the insertion holes **79**. The outside diameters of the second guide bosses **80** are substantially the same as the outside diameters of the first guide bosses **76**.

(2-3) Movable Members

As shown in FIG. **2**, the movable member **62** has a pantograph mechanism. The movable member **62** includes a front movable member **62** (hereinafter, referred to as a movable member **62**F) and a rear movable member **62** (hereinafter, referred to as a movable member **62**R).

The front movable member **62**F is provided such that when the front movable member **62**F is projected in the vertical direction, the front movable member **62**F overlaps the front end portion of the LED array **50**. The rear movable member **62**R is provided such that when the rear movable member **62**R is projected in the vertical direction, the rear movable member **62**R overlaps the rear end portion of the LED array **50**. That is, the two movable members **62** are provided to support both end portions of the LED array **50** in the front/rear direction, through both end portions of the holding member **63** (to be described below), respectively.

As shown in FIG. **4**, each of the movable members **62** includes a pair of first link members **82** and a second ring member **83**.

The paired first link members **82** are disposed to face each other in the left/right direction with a gap.

Each of the paired first link members **82** is formed in a substantially U shape open outward in the left/right direction as seen in a plan view, and includes a first flat plate portion **85** and two first fitting portions **86**.

The first flat plate portions **85** are formed in a substantially flat plate shape, and have section shapes extending in the vertical direction. Through-holes **87** are formed at the central portions of the first flat plate portions **85**.

The through-holes **87** are formed in a substantially circular shape in a side view, and extend in the left/right direction. The hole diameters of the through-holes **87** are substantially the same as the outside diameter of a corresponding shaft part **95** (to be described below).

The two first fitting portions **86** are provided at both end portions of the corresponding first flat plate portion **85** in the front/rear direction, and are formed in a substantially cylindrical shape protruding outward in the left/right direction from the outer face of the corresponding first flat plate portion **85** in the left/right direction.

The second ring member **83** is formed in a substantially T shape in a plan view, and includes a second flat plate portion **89** and the second fitting portion **90**.

The second flat plate portion **89** is formed in a substantially flat plate shape, and has a section shape extending in the vertical direction. The length of the second flat plate portion **89** in a longitudinal direction is substantially the same as the length of each first flat plate portion **85** in the longitudinal direction.

A through-hole **91** and an insertion hole **92** are formed at the second flat plate portion **89**.

The through-hole **91** is formed in a circular shape in a side view such that the through-hole **91** passes through the central portion of the second flat plate portion **89**. The hole diameter of the through-hole **91** is slightly larger than the outside diameter of the shaft part **95** (to be described below).

The insertion hole **92** is formed in a substantially circular shape in a side view such that the insertion hole **92** passes through the front end portion of the second flat plate portion **89**. The hole diameter of the insertion hole **92** is slightly larger than the outside diameter of the insertion shaft **94** (to be described below).

The second fitting portion **90** is formed in a substantially cylindrical shape extending in the left/right direction, and the central portion of the lower front side of the second fitting portion **90** in the left/right direction is connected to the rear end portion of the second flat plate portion **89**.

As shown in FIG. **3**, one pair of first link members **82** and the second link member **83** are disposed such that the second flat plate portion **89** is disposed between the first flat plate portions **85** and intersect with the first flat plate portions **85** in the form of an X, and then a shaft part **95** having a substantially cylindrical shape is inserted into the two through-holes **87** and the through-hole **91**, whereby the first flat plate portions **85** and the second link member **83** are connected so as to be rotatable with respect to each other (see FIG. **4**). That is, the pair of first link members **82** and second link member **83** intersect with each other and are pivotably supported by the shaft part **95** such that the first link members **82** and second link member **83** are rotatably on each other.

The front end portion of the second flat plate portion **89** of the front movable member **62**F is disposed between the paired first supporting portions **70**. An insertion shaft **94** having a substantially cylindrical shape is inserted into the two first guide bosses **76**, the two insertion holes **75**, and the insertion hole **92**. Accordingly, the front end portion of the second flat plate portion **89** is fixed to the first engagement portion **67** such that the front end portion of the second flat plate portion **89** and the first engagement portion **67** are rotatable with respect to each other. Further, in the front movable member **62**F, the rear end portions of the paired first flat plate portions **85** are disposed to sandwich the connection portion **69** from both sides in the left/right direction.

The front end portion of the second flat plate portion **89** of the rear movable member **62**R is disposed between the paired second supporting portions **78**. An insertion shaft **94**

having a substantially cylindrical shape is inserted into the two second guide bosses **80**, the two insertion holes **79**, and the insertion hole **92**, whereby the front end portion of the second flat plate portion **89** is fixed to the second engagement portion **68** such that the front end portion of the second flat plate portion **89** and the second engagement portion **68** are rotatable with respect to each other.

In this way, the front end portions of the two second link members **83** are fixed to the slide member **61** such that the two second link members **83** and the slide member **61** are rotatable with respect to each other, and the front movable member **62**F and the rear movable member **62**R are connected to the slide member **61**.

The slide member **61** and the movable members **62** are held by the holding member **63** and the LED supporting frame **35** as shown in FIG. **2**.

Specifically, while the first fitting portions **86** of the front sides (upper sides) of the first link members **82** are fit into the guide holes **105** of corresponding LED-side guide parts **97** from the inner side, the first fitting portions **86** of the rear sides (lower sides) of the first link members **82** are fit into the fitting holes **103** of corresponding main-body-side fitting parts **100** from the inner side.

In this way, the front-side first fitting portions **86** are held by the LED-side guide parts **97** such that the front-side first fitting portions **86** are movable in the front/rear direction and the front-side first fitting portions **86** and the LED-side guide parts **97** are rotatable with respect to each other, and the rear-side first fitting portions **86** are fixed to the main-body-side fitting parts **100** such that the rear-side first fitting portions **86** and the main-body-side fitting parts **100** are rotatable with respect to each other.

That is, the rear end portions of the two first link members **82** are fixed to the main body casing **2** such that the two first link members **82** and the main body casing **2** are rotatable with respect to each other, and the front end portions of the two first link members **82** are held by the holding member **63** such that the two first link members **82** are movable in the front/rear direction and the two first link members **82** and the holding member **63** are rotatable with respect to each other.

Further, the first guide bosses **76** and the second guide bosses **80** of the slide member **61** are fit into corresponding main-body-side guide parts **99** from the inner side in the left/right direction, and both end portions of the second fitting portion **90** of each second link member **83** in the left/right direction are fit into corresponding fitting holes **106** of a corresponding LED-side fitting portion **98** from the inner side in the left/right direction.

In this way, the first guide bosses **76** and the second guide bosses **80** are held by the main-body-side guide parts **99** such that the first guide bosses **76** and the second guide bosses **80** are movable along the front/rear direction, and both end portions of each second fitting portion **90** in the left/right direction are fixed to corresponding LED-side fitting portions **98** such that the second fitting portion **90** is relatively rotatable.

That is, the rear end portions of the two second link members **83** are fixed to the holding member **63** such that the two second link members **83** and the holding member **63** are rotatable with respect to each other, and the front end portions of the two second link members **83** are held to be movable in the front/rear direction with respect to the main body casing **2**.

In this way, the front and rear end portions of the holding member **63** are supported from the lower side by the front movable member **62**F and the rear movable member **62**R, respectively.

The slide member **61** is provided to be slidable along the front/rear direction between a first position (see FIG. **2**) and a second position (see FIG. **5**A). In a state where the front cover **5** is at a closed position, the slide member **61** is at the first position, and the front end portion of the pressed portion **65** abuts on the rear surface of the front cover **5**. Further, in a state where the front cover **5** is in an open position, the slide member **61** is at the second position, and the front end portion of the pressed portion **65** protrudes outward from the main body casing **2**. That is, the slide member **61** is slidable along the front/rear direction in accordance with the opening/closing operation of the front cover **5**.

As shown in FIG. **5**B, the compression springs **101** press the first guide bosses **76** (the second guide bosses **80**) toward the front side through the covering parts **102**, whereby the slide member **61** is always pressed toward the front side such that the slide member **61** is disposed at the second position. That is, the compression springs **101** press the slide member **61** from the first position toward the second position.

Further, as shown in FIG. **2**, in a state where the slide member **61** is at the first position, the movable members **62** are disposed at rising positions such that the first flat plate portions **85** and the second flat plate portions **89** form intersection angles θ (angles formed on the holding member (**63**) side) of, for example, 60° to 120°. At this time, the LED array **50** is disposed at exposure positions close to the photosensitive drum **15** such that the positioning roller **53** abuts on the photosensitive drum **15** and the LED array **50** exposes the photosensitive drum **15**.

Further, in a state where the slide member **61** is at the second position, the movable members **62** are disposed at tilting positions where the movable members **62** are tilted toward the LED supporting frame (**35**) side such that the intersection angles θ are larger than those at the rising positions. At this time, the LED array **50** is disposed at the evacuation position (see FIG. **5**A) such that the positioning roller **53** is distant from the photosensitive drum **15** and the LED array **50** is evacuated from the photosensitive drum **15**.

That is, in accordance with the sliding of the slide member **61**, the movable member **62** moves the LED array **50** between the exposure position and the evacuation position.

Incidentally, the intersection angles θ at the tilting positions are, for example, 140° to 170°. Further, at the tilting positions, the lower end portion of the second flat plate portion **89** of the front movable member **62**F is in contact with the inclined portion **71**.

4 . Mount and Removal of Drum unit with Respect to Main Body Casing

Now, mount and removal of the drum unit **10** with respect to the main body casing **2** will be described.

As shown in FIG. **2**, in a state where the front cover **5** is at the closed position, the pressed portion **65** are pressed toward the rear side against the pressing forces of the compression springs **101** (see FIG. **5**B) by the rear surface of the front cover **5**, whereby the slide member **61** is disposed at the first position.

At this time, the movable member **62** is disposed at the rising position, and the LED array **50** is disposed at the exposure position.

After the drum unit **10** is mounted in the main body casing **2**, in order to pull (remove) the drum unit **10** out of (from) the main body casing **2**, as shown in FIG. **5**A, first, the front cover **5** is moved from the closed position (see FIG. **2**) to the open position, whereby the main opening **4** is opened such that the drum-unit accommodating part **36** and the outside of the main body casing **2** are connected through the main opening **4**.

Then, the pressing of the front cover **5** on the slide member **61** is released, and the first guide bosses **76** are pressed toward the front side by the pressing forces of the compression springs **101**, whereby the first guide bosses **76** and the second guide bosses **80** are guided along the front/rear direction by corresponding main-body-side guide parts **99**. Therefore, the slide member **61** is moved toward the front side and slides along the front/rear direction from the first position to the second position.

In this case, the front end portion of the second flat plate portion **89** of the front movable member **62**F is moved toward the front side with movement of the first guide bosses **76**, and the front end portion of the second flat plate portion **89** of the rear movable member **62**R is moved toward the front side with movement of the second guide bosses **80**.

Then, the front-side first fitting portions **86** of the first link members **82** are moved toward the front side while rotating with respect to the LED-side guide parts **97**, in corresponding guide holes **105** (see FIG. **3**).

At this time, the rear-side first fitting portions **86** rotate inside corresponding fitting holes **103** (see FIG. **3**), and the second fitting portions **90** of the second link members **83** rotate inside corresponding fitting holes **106** (see FIG. **2**).

In this way, the movable members **62** are moved from the rising positions to the tilting positions.

Then, the front movable members **62**F and the rear movable members **62**R move the front end portion and rear end portion of the LED array **50** toward the lower side, respectively, at the same time. According thereto, the movable members **62** move the front and rear end portions of the LED array **50** at the same time, so as to move the LED array **50** in parallel from the exposure position to the evacuation position.

That is, the slide member slides in accordance with the movement of the front cover **5** from the closed position to the open position, and the LED array **50** moves from the exposure position to the evacuation position in accordance with the sliding of the slide member **61**.

Thereafter, when a user applies a force to pull the drum unit **10** toward the front side, the drum unit **10** moves downward, moves toward the front side, and is pulled out of the drum-unit accommodating part **36** along the front/rear direction through the main opening **4**. At this time, the drum unit **10** is moved such that the mount/removal grooves **46** of the drum frames **32** pass the upper end portions of the developing units **11**.

Then, when the user further pulls the drum unit **10** toward the front side, the drum unit **10** is removed from the main body casing **2**.

Therefore, the removal of the drum unit **10** from the main body casing **2** is completed.

Subsequently, mount of the drum unit **10** into the main body casing **2** will be described.

In order to mount the drum unit **10** into the drum-unit accommodating part **36** of the main body casing **2**, an operation is performed in a reverse procedure to that of the above-mentioned pullout (removal) operation.

Specifically, as shown in FIG. **5**A, the drum unit **10** is inserted toward the drum-unit accommodating part **36** through the main opening **4**, and is accommodated in the drum-unit accommodating part **36**.

Next, the front cover **5** is moved from the open position to the closed position.

Then, as shown in FIG. **2**, the pressed portion **65** of the slide member **61** is pressed by the front cover **5**, whereby the slide member **61** is moved from the second position to the first position.

At this time, in accordance with the movement of the slide member **61** from the second position to the first position, the movable members **62** move from the tilting positions to the rising positions.

Then, the front movable member **62**F and the rear movable member **62**R move the front end portion and rear end portion of the LED array **50** toward the upper side, respectively, at the same time. In this way, the movable members **62** move the LED array **50** in parallel from the evacuation positions to the exposure positions.

In this case, at the exposure positions, the positioning rollers **53** of the first frames **51** abut on the circumferential surfaces of the photosensitive drums **15**, and the LED array **50** is positioned with respect to the photosensitive drum **15**.

That is, in accordance with the movement of the front cover **5** from the open position to the closed position, the slide member **61** slides, and the LED array **50** moves from the evacuation position to the exposure position in accordance with the sliding of the slide member **61**.

Therefore, the mount of the drum unit **10** into the main body casing **2** is completed.

5 . Advantages

(1) The printer **1** according to the exemplary embodiment of the present invention includes the movable member **62** in addition to the slide member **62**, as shown in FIG. **2**. Therefore, so long as the movable member **62** secures an amount of movement of the slide member **61** corresponding to an amount of displacement of the LED array **50** between the exposure positions and the evacuation positions, it is possible to surely move the LED array **50** between the exposure position and the evacuation position.

Therefore, it is possible to reduce the amount of movement of the slide member **61**, as compared to a configuration without the movable member **62**.

As a result, it is possible to surely move the LED array **50** between the exposure position and the evacuation position, and to reduce a size of the printer **1**.

Further, the movable member **62** includes the front movable member **62**F and the rear movable member **62**R, and when the movable member **62** moves the LED array **50**, the front movable member **62**F and the rear movable member **62**R move the front end portion and rear end portion of the LED array **50**, respectively, at the same time.

Therefore, the movable member **62** can move the front and rear end portions of the LED array **50** at the same time.

As a result, it is possible to move the LED array **50** in parallel, and to prevent the LED array **50** from getting kinked.

Therefore, it is possible to suppress the LED array **50** from being damaged, and to prevent undesirable contact of the LED array **50** with the photosensitive drums **15**.

Further, when the movable member **62** moves the LED array **50** from the evacuation position to the exposure position, it is possible to surely make the positioning roller **53** abut on the photosensitive drum **15**. Therefore, it is possible to improve the accuracy of relative positioning of the photosensitive drum **15** and the LED array **50** at the exposure position.

Further, the slide member **61** slides along the front/rear direction, whereby the movable mechanism **60** moves the LED array **50** between the exposure position and the evacuation position. Therefore, it is possible to reduce interruption of the movable mechanism **60** when the drum unit **10** or the developing unit **11** is mounted into or removed from the main body casing **2** along the front/rear direction (e.g., the axial direction of the photosensitive drum **15**).

(2) The LED array **50** is disposed to face the photosensitive drum **15** from the lower side, and the movable mechanism **60** is provided below the LED array **50**.

Therefore, in a case where the movable member **62** moves the LED array **50** from the exposure position to the evacuation position as shown in FIG. **5**A, it is possible to surely position the LED array **50** at the evacuation position by gravity.

On the other hand, in a case where the movable member **62** moves the LED array **50** from the evacuation position to the exposure position as shown in FIG. **2**, since the movable member **62** is provided to support both end portions of the LED array **50**, it is possible to surely position the LED array **50** at the exposure position against gravity.

Therefore, it is possible to surely move the LED array **50** between the exposure position and the evacuation position.

As shown in FIG. **5**A, since the movable mechanism **60** is disposed across the LED array **50** from the photosensitive drum **15**, the movable mechanism **60** is sufficiently distant from the pullout track of the drum unit **10** from the main body casing **2**. Therefore, during the operation of pulling the drum unit **10** out of the main body casing **2**, it is possible to suppress interference between the drum unit **10** and the movable mechanism **60**, and to smoothly pull the drum unit **10** out of the main body casing **2**.

Further, since the movable mechanism **60** is disposed across the LED array **50** from the photosensitive drum **15**, it is possible to narrow the intervals between adjacent developing units **11** (see FIG. **1**).

Therefore, it is possible to reduce the size of the printer **1** in the arrangement direction of the plurality of (e.g., four) developing units **11**, that is, the left/right direction.

(3) As shown in FIG. **1**, the plurality of (e.g., four) photosensitive drums **15** are provided corresponding to multiple colors (black, yellow, magenta, and cyan) and are arranged at intervals in the left/right direction.

Therefore, it is possible to form full color images.

Further, since the slide member **61** slides along the front/rear direction, whereby the movable mechanism **60** moves the LED array **50** between the exposure position and the evacuation position, it becomes unnecessary to secure a space for moving the LED array **50** in the left/right direction.

Therefore, it is possible to narrow intervals between axes of adjacent photosensitive drums **15**, to form full color images, and to further downsize the printer **1**.

(4) The slide member **61** is slidable between the first position which is the position of the slide member **61** in a state where the front cover **5** is at the closed position as shown in FIG. **2** and the second position which is the position of the slide member **61** in a state where the front cover **5** is at the open position as shown in FIG. **5**A. Further, the main-body-side guide part **99** includes the compression spring **101** configured to press the slide member **61** from the first position toward the second position as shown in FIG. **5**B.

Therefore, it is possible to simplify the configuration of the printer **1**, and to surely make the slide member **61** slide between the first position and the second position in accordance with the opening/closing operation of the front cover **5**.

As a result, it is possible to surely link the opening/closing operation of the front cover **5** and the sliding of the slide member **61**.

(5) The movable mechanism **60** includes the holding member **63** for holding the LED array **50** as shown in FIG. **2**. Further, the movable member **62** includes one pair of first link members **82** and a second link member **83** as shown in FIG. **3**. The pair of first link members **82** and the second link member **83** are disposed to intersect with each other such that the second flat plate portion **89** is disposed between paired first flat plate portions **85**, and form an X shape together with the paired first flat plate portions **85**, and then a shaft part **95** having a substantially cylindrical shape is inserted into the two through-holes **87** and the through-hole **91**, whereby the pair of first link members **82** and second link member **83** are connected to be rotatable with respect to each other (see FIG. **4**)

Further, as shown in FIG. **2**, in a state where the slide member **61** is at the first position, the movable member **62** is disposed at rising positions such that the first flat plate portions **85** and the second flat plate portions **89** form intersection angles θ (angles formed on the holding member (**63**) side) of, for example, 60° to 120°. Meanwhile, in a state where the slide member **61** is at the second position, the movable member **62** is disposed at tilting positions where the movable member **62** is tilted toward on the LED supporting frame (**35**) side such that the intersection angles θ are larger than those at the rising positions.

Therefore, in accordance with the movement of the front cover **5** from the closed position to the open position, the slide member **61** slides, and in accordance with the sliding of the slide member **61**, the movable member **62** moves from the tilting position to the rising position, thereby moving the LED array **50** from the exposure position to the evacuation position.

On the other hand, the slide member **61** slides in accordance with the movement of the front cover **5** from the open position to the closed position, and the LED array **50** moves from the evacuation position to the exposure position in accordance with the sliding of the slide member **61**.

As a result, it is possible to secure a larger amount of displacement of the movable member **62** with respect to the amount of movement of the slide member **61**.

Therefore, even if the amount of movement of the slide member **61** is reduced, it is possible to surely move the LED array **50** between the exposure position and the evacuation position, and thus it is possible to further reduce the size of the printer **1**.

Further, the front movable member **62**F and the rear movable member **62**R are provided to support the front and rear end portions of the LED array **50** through the front and rear end portions of the holding member **63**, respectively. That is, the front and rear end portions of the holding member **63** are supported from the lower side by the front movable member **62**F and the rear movable member **62**R, respectively.

Therefore, it is unnecessary to additionally provide members other than the holding member **63** for supporting the LED array **50** (or simplification is possible). As a result, it is possible to reduce the number of components, and to reduce the size of the printer **1**, specifically, reduce the size of the printer **1** in the left/right direction.

The invention claimed is:

1. An image forming apparatus comprising:

a main apparatus body having an accommodating space partitioned therein and an opening connecting the accommodating space and an outside;

a drum unit comprising a photosensitive drum configured to carry a developer image and accommodated in the accommodating space;

an opening/closing member configured to rotate between an open position for opening the opening and a closed position for closing the opening, a rotation axis of the

opening/closing member extending in a first direction perpendicular to an axial direction of the photosensitive drum;

an exposing member extending in a second direction parallel to the axial direction of the photosensitive drum and configured to expose the photosensitive drum to form a latent image thereon; and

a movable mechanism comprising:

a first movable member configured to contact the opening/closing member and move in accordance with an opening/closing operation of the opening/closing member;

a second movable member configured to move the exposing member between an exposure position close to the photosensitive drum and a separated position separated from the photosensitive drum, the exposing member in the separated position being closer to the first movable member than the exposing member in the exposure position; and

a restricting member including link members which restrict the exposing member from being moved in the axial direction of the photosensitive drum when the exposing member moves between the separated position and the exposure position, wherein the second movable member is configured to move the exposing member from the exposure position to the separated position by moving the first movable member in accordance with movement of the opening/closing member from the closed position to the open position,

wherein the second movable member is configured to move the exposing member from the separated position to the exposure position by moving the first movable member in accordance with the movement of the opening/closing member from the open position to the closed position,

wherein the first movable member is configured to slide along the axial direction of the photosensitive drum in accordance with an opening/closing operation of the opening/closing member.

2. The image forming apparatus according to claim **1**,

wherein the exposing member is disposed so as to face the photosensitive drum from a lower side, and

wherein the movable mechanism is provided below the exposing member.

3. The image forming apparatus according to claim **1**, wherein a plurality of photosensitive drums corresponding to multiple colors is provided including the photosensitive drum such that one of the plurality of photosensitive drums is arranged in parallel with an adjacent one of the plurality of photosensitive drums with an interval therebetween.

4. The image forming apparatus according to claim **1**,

wherein the first movable member is configured to move between a first position where the first movable member is disposed when the opening/closing member is disposed at the closed position and a second position where the first movable member is disposed in a state where the opening/closing member is disposed at the open position, and

wherein the main apparatus body comprises a pressing member configured to press the first movable member from the first position toward the second position.

5. The image forming apparatus according to claim **4**, wherein the first movable member is configured to contact the opening/closing member with receiving a pressing force from the pressing member when the first movable member is disposed at the first position.

6. The image forming apparatus according to claim **1**,

wherein the first movable member comprises a guide boss, and

wherein the main apparatus body comprises:

a guide part configured to guide the guide boss in the axial direction of the photosensitive drum; and

a pressing member configured to press the guide boss in the axial direction of the photosensitive drum.

7. The image forming apparatus according to claim **1**,

wherein the first movable member comprises a contact portion, and

wherein the first movable member is configured to move in accordance with an opening/closing operation of the opening/closing member in response to the contact portion contacting the opening/closing member.

8. The image forming apparatus according to claim **1**, wherein the first movable member is configured to move in a direction parallel to the second direction, the second direction being parallel to the axial direction of the photosensitive drum.

9. The image forming apparatus according to claim **1**, wherein the drum unit is configured be pulled out of the accommodating space along the axial direction of the photosensitive drum.

10. The image forming apparatus according to claim **1**,

wherein the second movable member is configured to move the exposing member from the exposure position down to the separated position by moving the first movable member in accordance with the movement of the opening/closing member from the closed position to the open position, and

wherein the second movable member is configured to move the exposing member from the separated position up to the exposure position by moving the first movable member in accordance with the movement of the opening/closing member from the open position to the closed position.

11. The image forming apparatus according to claim **1**,

wherein the second movable member is configured to move the exposing member from the exposure position down to the separated position by a slide movement of the first movable member in the second direction along the axial direction of the photosensitive drum in accordance with the movement of the opening/closing member from the closed position to the open position,

wherein the second movable member is configured to move the exposing member from the separated position up to the exposure position by the slide movement of the first movable member in a third direction, which is opposite to the second direction, along the axial direction of the photosensitive drum in accordance with the movement of the opening/closing member from the open position to the closed position.

12. The image forming apparatus according to claim **11**, wherein the drum unit is configured to be moved into the accommodating space from the outside in the second direction through the opening.

13. An image forming apparatus comprising:

a main apparatus body having an accommodating space partitioned therein and an opening connecting the accommodating space and an outside;

a drum unit comprising a photosensitive drum configured to carry a developer image and accommodated in the accommodating space;

an opening/closing member configured to rotate between an open position for opening the opening and a closed position for closing the opening, a rotation axis of the

opening/closing member extending in a first direction perpendicular to an axial direction of the photosensitive drum;

an exposing member extending in a second direction parallel to the axial direction of the photosensitive drum and configured to expose the photosensitive drum to form a latent image thereon; and

a movable mechanism comprising:

a first movable member configured to contact the opening/closing member and move in accordance with an opening/closing operation of the opening/closing member; and

a second movable member configured to move the exposing member between an exposure position close to the photosensitive drum and a separated position separated from the photosensitive drum, the exposing member in the separated position being closer to the first movable member than the exposing member in the exposure position,

wherein the second movable member is configured to move the exposing member from the exposure position to the separated position by moving the first movable member in accordance with movement of the opening/closing member from the closed position to the open position,

wherein the second movable member is configured to move the exposing member from the separated position to the exposure position by moving the first movable member in accordance with the movement of the opening/closing member from the open position to the closed position,

wherein the first movable member comprises a guide boss, and

wherein the main apparatus body comprises:

a guide part configured to guide the guide boss in the axial direction of the photosensitive drum; and

a pressing member configured to press the guide boss in the axial direction of the photosensitive drum.

14. An image forming apparatus comprising:

a main apparatus body having an accommodating space partitioned therein and an opening connecting the accommodating space and an outside;

a drum unit comprising a photosensitive drum configured to carry a developer image and accommodated in the accommodating space;

an opening/closing member configured to rotate between an open position for opening the opening and a closed position for closing the opening, a rotation axis of the opening/closing member extending in a first direction perpendicular to an axial direction of the photosensitive drum;

an exposing member extending in a second direction parallel to the axial direction of the photosensitive drum and configured to expose the photosensitive drum to form a latent image thereon; and

a movable mechanism comprising:

a first movable member configured to contact the opening/closing member and move in accordance with an opening/closing operation of the opening/closing member; and

a second movable member configured to move the exposing member between an exposure position close to the photosensitive drum and a separated position separated from the photosensitive drum, the exposing member in the separated position being closer to the first movable member than the exposing member in the exposure position; and

wherein the second movable member is configured to move the exposing member from the exposure position to the separated position by moving the first movable member in accordance with movement of the opening/closing member from the closed position to the open position,

wherein the second movable member is configured to move the exposing member from the separated position to the exposure position by moving the first movable member in accordance with the movement of the opening/closing member from the open position to the closed position, and

wherein the first movable member is configured to slide in a direction parallel to the second direction, the second direction being parallel to the axial direction of the photosensitive drum.

15. The image forming apparatus according to claim **14**, wherein the first movable member is configured to slide along the axial direction of the photosensitive drum in accordance with an opening/closing operation of the opening/closing member.

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